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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/006,777	01/14/1998	CHRIS L. HOOGENBOOM	100-010	4131

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EXAMINER

GEORGE, KEITH M

ART UNIT PAPER NUMBER

2663

DATE MAILED: 05/14/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/006,777

Applicant(s)

HOOGENBOOM ET AL.

Examiner

Keith M. George

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 February 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 23-32 and 55-96 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 23-32 and 55-96 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 January 1998 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Objections

1. Claims 68-72 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form.

- a. Claim 68 is a duplicate of claim 58.
- b. Claim 69 is a duplicate of claim 59.
- c. Claim 70 is a duplicate of claim 60.
- d. Claim 71 is a duplicate of claim 61.
- e. Claim 72 is a duplicate of claim 62.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 23-26 and 28-30 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Hayter et al., U.S. Patent 5,448,559, hereinafter Hayter.

4. Referring to claim 23, Hayter teaches an ATM communication system having a plurality of input ports and a plurality of output ports, each of the input ports being fed from an input port

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server and each of the output ports being arranged to feed an output port server. The input port servers each have a plurality of buffer stores (data stores) (figure 4, 28, 29, 30), one for each of the output ports (output ports associated with the plurality of data stores) to which output port data is transmitted through the switch. Each buffer store in the input port servers is arranged to interrogate the output port server with which it communicates by a bandwidth request ("Requests") before the transmission of data (using the allocation units (input and output control) 31 and 37 in figure 4). This determines whether output port server data handling capacity is available, whereby ATM switch operation (switch fabric for switching data for any of the input ports to any of the output ports) during periods of peak traffic is facilitated. The system includes a queuing arrangement (data stores are arranged to buffer data units) for bandwidth requests received during periods when there is no available bandwidth capacity, the arrangement being such that requests are released in a predetermined order when capacity becomes available (abstract and figures 1 and 4). Hayter goes on to teach that the mechanism for handling a bandwidth request in figure 2 where it is taught that upon receipt of a bandwidth request ("Request"), a comparison is made in a comparator with the available bandwidth as stored in a bandwidth allocation table that is representative of storage portions (figure 1, 11, 12, 13) (monitor the backlog of buffered data units for delivery to their associated output ports). If bandwidth is available, a positive acknowledgement is sent, if bandwidth is not available, the request is rejected and a negative acknowledgement is sent (if the backlog reaches a particular level, enforce a rate limitation against additional data units for delivery) (column 3, line 67 - column 4, line 12). It is clear that Hayter is teaching a system that will allow for an input port to request available bandwidth from an output port. The system also includes a queuing

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arrangement for bandwidth requests received during periods when there is no available bandwidth; requests are then released in a predetermined order (additional data units in violation of the rate limitation are filtered) (column 2, lines 61-68).

5. Referring to claims 24-26, Hayter teaches the switch described in reference to claim 23 above and also teaches that the system further comprises a priority releasing system for queued requests determined in dependence upon character of data appertaining to each queued request (column 6, lines 50-53).

6. Referring to claims 28-30, Hayter teaches the switch described in reference to claim 23 above and also clearly teaches that if sufficient bandwidth is available, a signal is sent to provide a positive acknowledgement from a bandwidth allocator to update the bandwidth allocation table. If sufficient bandwidth is not available to meet the request, a signal is sent which rejects the request and a negative acknowledgement signal is provided (column 4, lines 4-12).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 27, 31 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hayter as applied to claim 23 above and further in view of Hluchyj et al., U.S. Patent 5,497,375, hereinafter Hluchyj.

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9. Referring to claims 27 and 31, Hayter teaches the switch described in reference to claim 23 above with the possible exception of using a "leaky bucket" algorithm to determine data units with a relatively low priority. Hluchyj teaches a device and method for ATM end system cell flow regulation including having a cell pass through a leaky bucket monitor to determine if it is violation of the traffic parameters negotiated during the call set-up. The cell header is set to 1 if the leaky bucket state is set to violate and set to 0 if the leaky bucket state is set to normal (column 3, lines 17-22). At the time the invention was made it would have been obvious to a person of ordinary skill in the art to utilize the leaky bucket teachings of Hluchyj as used in an ATM cell flow regulation with the teaching of Hayter. One of ordinary skill in the art would have been motivated to do this to monitor a sustainable cell rate and an associated burst tolerance for each connection (Hluchyj, column 3, lines 11-12).

10. Referring to claim 32, Hayter and Hluchyj teach the switch as described in reference to claims 27 and 31 above and Hayter has already been shown to clearly teach that if bandwidth is not available to meet the request, a signal is sent which rejects the request and a negative acknowledgement signal is provided (column 4, lines 8-12). It should also be noted that Hayter teaches that during periods when there is no available capacity, the arrangement being such that requests are released in a predetermined order when capacity becomes available (column 2, lines 61-67).

11. Claims 55-96 are rejected under 35 U.S.C. 103(a) as being unpatentable over Osaki et al., U.S. Patent 5,444,706, hereinafter Osaki in view of Heiss, U.S. Patent 5,754,529, hereinafter Heiss.

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12. Regarding claims 55, 63, 75 and 84, Osaki discloses an ATM switch comprising: a plurality of input ports (i.e. fig. 4, 55, DATA PATH shows the input port for the switch, it is inherent that there are more than one input port for the switch); a plurality of output ports, each associated with a data store and an output control (i.e. fig. 4, 58, 50; output from the switch is stored in a buffer and the information is processed, it is inherent that a switch has a plurality of outputs); a switch fabric (i.e. fig. 4, 55; it is equivalent to a packet switch); and a rate filter (i.e. fig. 4, 50, discarding module determines whether the data units will be filtered), wherein the data stores are arranged to buffer data units for delivery (i.e. fig. 4, 58) and monitors backlog if backlog reaches a particular level, to enforce a rate limitation against additional data units for delivery to their output ports, wherein the additional data units in violation of the rate limitation are filtered by the rate filter do they are not stored in the data stores (i.e. col. 6, ll. 43-65; when packets stored exceed the prescribed value, packets will be discarded so the rate will be closest to the predetermined value. Osaki does not specifically disclose segregating the data unit for storage in the data stored based on their designated priorities, and output control monitors two or more of the data stores. However, Heiss teaches that data units are segregated into different buffers according to priority (i.e. fig. 1, cells are buffered in CBR-QU, ABR-QU or VBR0QU according to the cell's priority rate) and the output control monitors all the buffers (i.e. fig. 1, OC, col. 6, ll. 20-25). Therefore, it would have been obvious to an ordinary person skilled in the art at the time of the invention to include an output control and segregating data units according to priorities of a handling system as taught by Heiss with the switch of Osaki. The motivation is to have a circuit arrangement that is of relatively low circuit-oriented expense in order to

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implement the message cells supplied to this circuit arrangement upon retention of the characteristic parameters determined for the individual virtual circuit connections.

13. Regarding claims 56-58, 68, 73, 66, 67, 76-78, 87-89 and 95, Osaki does not specifically disclose high priorities units are not in violation while low priorities are in violation based on a leaky bucket algorithm. However, Heiss teaches that packets will be dropped according to priorities using leaky bucket algorithm (i.e. col. 6, ll. 44-45, LBM will discard depending CLP; some cells have high cell loss priority while others have low cell loss priority, CLP=1,0).

Therefore, it would have been obvious to an ordinary person skilled in the art at the time of the invention to include loss priorities to determine which packets will be dropped as taught by Heiss with the switch of Osaki in order to improve the performance of the network.

14. Regarding claims 59, 69, 79 and 90, backlog falls below a particular level, output controls are arranged to lift the rate limitation (i.e. it is inherent that once there is no backlog, no packets need to be discarded)

15. Regarding claims 60, 70, 81 and 92, Osaki discloses data stored are physically associated with the output ports (i.e. fig. 4, 58 is directly connected to 5).

16. Regarding claims 61, 71, 74, 82, 91, 93 and 96, Osaki does not specifically disclose that the buffer is located at the input so that the discarding occurs at the input. However, official notice is taken that it is notoriously well known that buffering can occur at the input and discarding can occur there. Therefore, it would have been obvious to an ordinary person skilled in the art at the time of the invention to include locating the buffer and enforcing the violation of the switch of Osaki in view of Heiss at the input in order to prevent packets that would be discarded anyway from causing congestion in the switch.

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17. Regarding claims 62, 72, 83 and 94, rate limitation is enforced at the output (i.e. fig. 4, 50, discarding is at the output buffer).

18. Regarding claims 64, 65, 80 and 85-87, Osaki discloses output store has input port combination (i.e. fig. 4, output to 5 is in combination with input from 1) but does not specifically disclose output data stores having distinct priorities. However, Heiss teaches that data units are segregated into different buffers according to priority (i.e. fig. 1, cells are buffered in CBR-QU, ABR-QU or VBR-QU according to the cell's priority rate) and the output control monitors all the buffers (i.e. fig. 1, OC, col. 6, ll. 20-25). Therefore, it would have been obvious to an ordinary person skilled in the art at the time of the invention to include an output control and segregating data units according to priorities of a handling system as taught by Heiss with the switch of Osaki. The motivation is to have a circuit arrangement that is of relatively low circuit-oriented expense in order to implement the message cells supplied to this circuit arrangement upon retention of the characteristic parameters determined for the individual virtual circuit connections.

Response to Arguments

19. Applicant's arguments regarding claims 23-32 filed 26 February 2004 have been fully considered but they are not persuasive.

20. On page 11 of the Amendment, applicant argues that Hayter does not teach that the additional data units in violation of the rate limitation are filtered by the rate filter. In response, Hayter has clearly taught a queuing arrangement for bandwidth requests received during periods when there is not available bandwidth. This queuing arrangement clearly occurs when

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bandwidth is not available; therefore it would be in violation of the rate limitation. Hayter then teaches that the requests are released in a predetermined order that clearly indicates that a filtering operation is being performed. Without a filtering operation, performed by a rate filter, Hayter would not be able to release the requests in a predetermined order.

21. In response to applicant's argument on page 12 that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971). The problem to be solved was clearly taught by Hluchuj and therefore did not include knowledge gleaned from the applicant's disclosure. The court has consistently stated that a court or examiner may find a motivation to combine prior art references in the nature of the problem to be solved. See *Ruiz v. A.B. Chance Co.*, 69 USPQ2d 1686 (CA FC 2004).

22. In response to new claims 55-96, which are basically identical to previously presented claims, the rejections stated in the Office Action mailed 20 June 2003 (Paper #22) are maintained. Applicant's request that the action not be made final is denied given the fact that applicant has had significant opportunity to respond to these rejections in Amendment F, filed 22 September 2003 and Amendment G, filed 26 February 2004. Applicant's arguments regarding claims 55-96 filed 26 February 2004 have been fully considered but they are not persuasive. Applicant argues on page 12 of the amendment that neither Osaki nor Heiss disclose a rate filter

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adapted to filter data units before they are buffered in order to prevent their being stored in the output data stores. In response, Osaki has clearly been shown to teach a rate filter in figure 4 and as applicant admits, when packets to be discarded are decided in this manner, the packet discard processor 52 of the same discard processor 50 discards the corresponding packets from the buffer 58 and the discard history (discard rate) of the packet discard history memory 53 is rewritten on the basis of the discarded result of the processor 52 (column 8, lines 33-39). Clearly Osaki is teaching that the packets are discarded from the buffer and not stored. Osaki and Heiss have been clearly shown to teach the limitations, as stated, in claims 55-96.

Conclusion

23. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Keith M. George whose telephone number is 703-305-6531. The examiner can normally be reached on M-Th 7:00-4:30, alternate F 7:00-3:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chau T. Nguyen can be reached on 703-308-5340. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Keith M. George
11 May 2004



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